



# CROMPTON INSTRUMENTS ENERGY METERS



# MID APPROVED ENERGY METERS



## Features

- Blue backlit LCD
- Direct and CT connection
- Accuracy class 1 for active energy and power
- Accuracy class 2 for reactive energy and power
- The standard versions can be combined with communication modules
- Energy registers for import and export
- Instantaneous active and reactive power display
- Sealable terminal covers
- Storage of energy values and configuration digital display (EEPROM)
- Tariff identifier display

## Approvals



The modular DIN-rail MID approved energy meters portfolio offers a wide range of instruments capable of capturing and communicating energy measurements on electrical installations where billing is required. The DIN-rail mounted electricity energy meters are designed for high level accuracy performance and are safe and fast to install. MID approved energy meters approval ensures compatibility with EU market without a need for further testing. These features make Crompton Instruments MID approved energy meters an ideal solution for residential, utility and industrial energy consumption monitoring.

The MID approved energy meters range is available for single and three phase systems and the range features include a blue backlit LCD screen, direct or CT connection capability, sealable terminal covers, and tariff identifier display. Energy consumption can be remotely monitored via SO pulse outputs or can be communicated with Modbus RS 485 RTU, M-Bus, KNX and SD card datalogger interfaces.

## Measuring Instruments Directive 2004/22/EC

For manufacturers and end-users selling and using measuring instruments intended for trade.

The directive that came into force in 30th of October 2006 is designed to create a single European market for approved meters to allow the free movement and use of this equipment within the European Union without a need for any additional testing.

Since October 2006 every meter manufactured and used for electricity billing must be MID approved energy meters or UK legislation approved and as of October 2016 all meters installed for billing must be only MID approved energy meters. Moreover, it is a criminal offence to install a non-approved meter for billing.

Meters installed prior to October 2006 may remain installed, however they have to measure accurately.

The directive also includes the quality management system certification for manufacturers to ensure compliance with the directive to protect the end user who uses the data collected by meters on a daily basis.

## DRM Energy Meters Overview

Product code	MID certified	Single-phase	Three-phase	Module width	CT feed (5A)	Direct connection 32A	Direct connection 40A	Direct connection 80A	Direct connection 125A	Option connection interface	Modbus built in	M-Bus built in	Two tariff T1 & T2	Pulse output (SO)	Catalogue page
DRM-32-1P	X	X		1		X				X				X	3
DRM-80-1P	X	X		3				X		X			X	X	6
DRM-125-1P	X	X		3					X	X			X	X	6
DRM-125-1P-MOD	X	X		3					X	X	X		X		6
DRM-125-1P-M	X	X		3					X	X		X	X		6
DRM-5-3P	X		X	4	X					X			X	X	9
DRM-80-3P	X		X	4				X		X			X	X	9
DRM-125-3P	X		X	6					X	X			X	X	9
DRB-5-3P	X		X	4	X								X	X	22
DRB-80-3P	X		X	4				X					X	X	22
DRB-5-3P-M	X		X	4	X							X	X		25
DRB-80-3P-M	X		X	4				X				X	X		25
DRB-5-3P-MOD	X		X	4	X						X		X		25
DRB-80-3P-MOD	X		X	4				X			X		X		25
DRM-M				1											15
DRM-KNX				1											17
DRM-MOD				1											13
DRM-LOG				1											19
DRM-LOG-PS				1											19

# DRM ENERGY-METERS SINGLE-PHASE 32A/40A



## Features

- Display LCD
- For direct connection 32A
- 7 digits for energy and other values indication
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Operating range current (Ist ... I<sub>max</sub>) for direct connection 32A = 0.020 ... 32A
- Sealable terminal covers
- The standard versions are designed to be combined with the communication module
- DIN modules wide (18mm)



## ► Direct connection 32A

The energy-meters use an LCD display to give a clear reading and are used to measure single-phase systems in residential, utility and industrial applications. Monitoring of the energy-consumption is via two SO pulse outputs. The products can be set up to communicate with Modbus RTU, M-Bus, KNX and SD card datalogger interfaces, and thus can be used to analyse energy-consumption in order to reduce to a minimum the running cost for industrial plants and buildings.

Active energy-meters for single-phase alternating current with a, 7 digits counter. These meters have 1 SO output generating pulses for remote processing of the active energy measurements for 1 tariff.

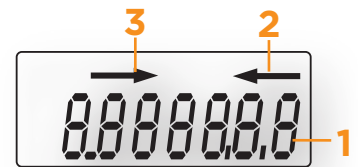
## Parameters

Display		Unit	ID
Active energy	Tariff	kWh	Energy imported and exported
Active power	Tariff	kW	Instantaneous value imported and exported
Current		A	
Voltage		V	
Power factor		cos $\phi$	
Frequency		Hz	

## Display

Liquid crystal display

- 1 kWh display and other parameters
- 2 Power export (supplied r)
- 3 Power import (absorbed R)



## 1 standard module housing, suitable for DIN-rail mounting Direct connection 32A

Terminals connection neutral network

Terminals for SO pulse output

Optic control IR for external communication

Precision control LED

Supply terminals 32A direct connection L $\uparrow$ - L $\downarrow$

Space for the certification data can be provided on request MID



Display easy to read

Readout selection push button kWh and other parameters



## Parameters

Display	Version
Active energy register in T1 import/export	32A
Instantaneous power active import/export	32A
FW release	32A
FW checksum	32A

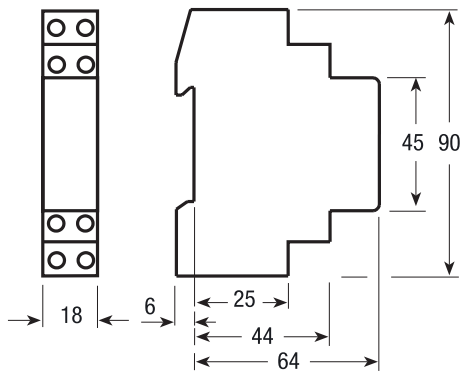
## Technical Data

Display		Units	DRM - 32 - 1P direct connection 32A
<b>Supply</b>			
Rated control supply voltage Un		V AC	230
Operating range voltage		V AC	184 ... 276
Rated frequency fn		Hz	50 ±2%
Rated power dissipation (max.) Pv		VA (W)	≤8 (0.6)
<b>Overload capability</b>			
Voltage Un	continuous	V AC	276
	momentary (1 s)	V AC	300
Current Imax	continuous	A	32
	momentary (10 ms)	A	960
<b>Display (readouts)</b>			
Display type	LCD	n° digits	7 (2 decimals)
	digit dimensions	mm x mm	6 x 3
Active energy: 1 display, 7-digit		kWh	0.00 ... 999999.9
Instantaneous tariff measurement		-	1
	1 display, 1-digit	-	T1
Display period refresh		s	1
<b>Measuring accuracy</b>			
Active energy and power	at 23 ±1°C, referred to nominal values acc.to EN 50470-3	class 1	B (±1)
<b>Measuring input</b>			
Type of connection	phase/N	-	direct
Operating range voltage	phase/N	V AC	184 ... 276
Current Iref		A	5
Current Imin		A	0.25
Operating range current (1st ... Imax)	direct connection	A	0.02 ... 32
Frequency		Hz	50 ±2%
Operating frequency		Hz	44 ... 66
Input waveform		-	alternating
Starting current for energy measurement (Ist)		mA	20
Differential		%	1
<b>Pulse output SO</b>			
Pulse output	acc.to EN 62053-31 for active energy	-	yes
Pulse quantity		imp/kWh	1000
Pulse duration		ms	90
Required voltage	min. (max.)	V AC (DC)	5 ... 230 ±5% (5 ... 300)
Permissible current	pulse ON (max. 230V AC/DC)	mA	90
Permissible current	Impulse OFF (leakage cur. max. 230V AC/DC)	µA	1
<b>Optical interface</b>			
Front side (accuracy control)	LED	imp/kWh	5000
<b>Safety acc. to EN 50470-1</b>			
Indoor meter		-	yes
Degree of pollution		-	2
Operational voltage		V AC	300
AC voltage test (EN 50470-3, 7.2)		kV	4
Impulse voltage test		1.2/50 µs-kV	6
Protection class (EN 50470)		class	II
House material flame resistance	UL 94	class	V0

## Product Codes

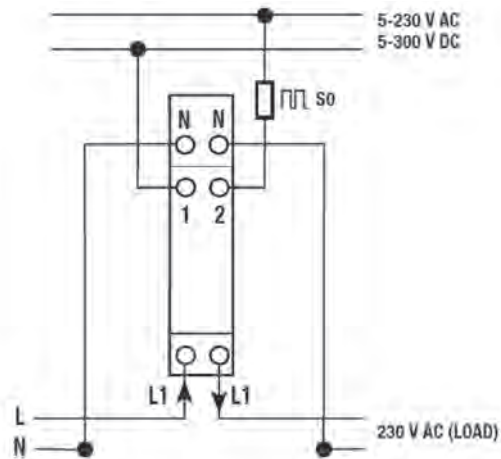
Description	Comm	DIN mod.	Part number
LCD kWh, 1 tariff, 1SO, non resettable, 32 Amp - MID	pulse	1	DRM-32-1P
<b>Optional communication Interfaces</b>	M-BUS	1	DRM-M
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

## Dimensions



## Circuit diagrams

DRM-32-1P



32A fuses are recommended for line protection.

# DRM ENERGY-METERS SINGLE-PHASE 80A/125A



## Features

- Blue backlit LCD
- Direct connection 80A/125A
- 8 digit display
- Accuracy class 1 for active energy
- Accuracy class 2 for reactive energy
- The standard versions can be combined with the communication modules
- Energy register for import and export
- Sealable terminal covers
- 3 DIN modules wide (52mm)
- Storage of energy values and configuration digital display (EEPROM)
- Tariff identifier display for active and reactive energy.



## ► Direct connection 80A/125A

These meters are used to measure the energy consumption in single-phase systems in residential, utility and industrial applications, and use a blue backlit LCD screen to give clear readings. Monitoring of the energy-consumption is via two SO pulse outputs. The products can be set up to communicate with Modbus RTU, M-Bus, KNX and SD card Datalogger interfaces, and thus can be used to analyse energy-consumption in order to reduce to a minimum the running cost for Industrial plants and buildings.

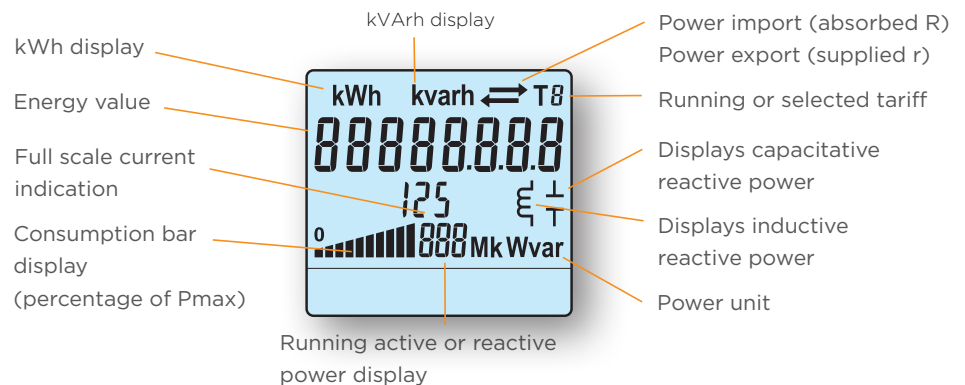
A single phase energy meter with an 8 digit, 2 decimal, display showing the total energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 Tariffs.

## Parameters

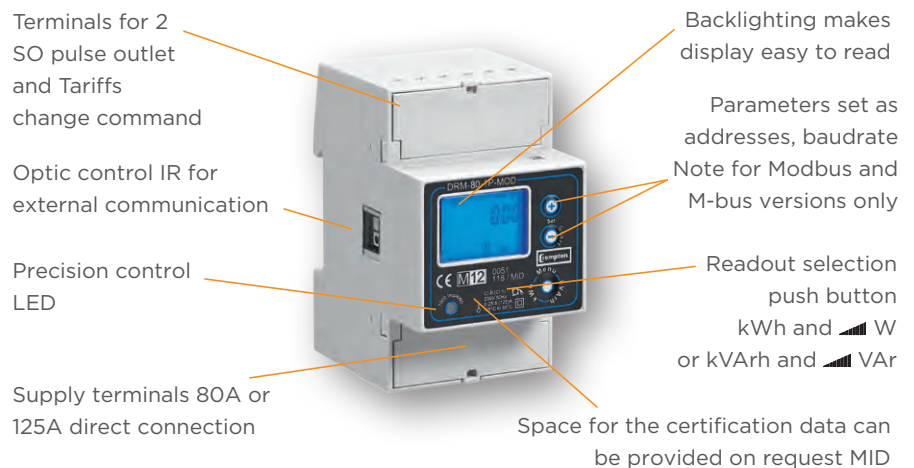
Display	Unit		
Active energy	Tariff 1	kWh	Import, export
	Tariff 2	kWh	Import, export
Reactive energy	Tariff 1	kVArh	Import, export
	Tariff 2	kVArh	Import, export
Active power		(k-M) W	Import, export
Reactive power		(k-M) VAR	Import, export

## Display

Liquid crystal display with illuminated blue background.



## 3 standard module housing, suitable for DIN-rail mounting Direct connection 80A and 125A



## Technical Data

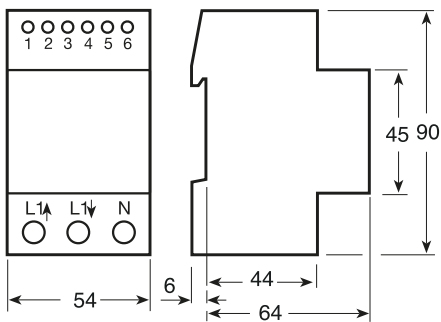
Display	Units	DRM - 80 - 1P, DRM - 125 - 1P	DRM - 125 - 1P - MOD	DRM - 125 - 1P - M
<b>Supply</b>				
Certified voltage range Un	V AC	230 ±20%	230 ±20%	230 ±20%
Operating voltage range	V AC	110 ... 276	110 ... 276V	110 ... 276
Certified frequency fn	Hz	50 ±2%	50 ±2%	50 ±2%
Operating frequency range	Hz	44 ... 66	44 ... 66	44 ... 66
Rated power dissipation (max.) Pv	VA (W)	<8 (0.6)	≤8 (0.6)	≤8 (0.6)
<b>Overload capability</b>				
Voltage Un continuous	V AC	276	276	276
Momentary (1 s)	V AC	300	300	300
Current Imax continuous	A	80 or 125	125	125
Momentary (10 ms)	A	2400 or 3750	3750	3750
<b>Display (readouts)</b>				
Display type LCD	n° digits	8 (2 decimal)	8 (2 decimal)	8 (2 decimal)
Digit dimensions	Mm	6.00 x 3	6 x 3	6 x 3
Active energy: 1 display, 7-digit tariffs 2	kWh	0.01	0.01	0.01
+ display import or export (arrow) overflow	kWh	999999.99	999999.99	999999.99
Reactive energy: 1 display, 7-digit tariffs 2	kvarh	0.01	0.01	0.01
+ display import or export (arrow) overflow	kvarh	999999.99	999999.99	999999.99
Instantaneous active power: 1 display, 3-digit	W, kW, MW	000 ... 999	000 ... 999	
Instantaneous reactive power: 1 display, 3-digit	VAr, kVAr, MVar	000 ... 999	000 ... 999	000 ... 999
Instantaneous tariff measurement		1	1	1
Display period refresh	s	1	1	1
<b>Measuring accuracy</b> at 23 ±1°C, referred to nominal values				
Active energy and power acc.to EN 50470-3		B (1%) class 1	B (1%)	B (1%)
Reactive energy and power acc. to EN 62053-23		2% class 2	2%	2%
<b>Measuring input</b>				
Type of connection	phase/N	direct	direct	direct
Operating range voltage	V AC	110 ... 276	110 ... 276	110 ... 276
Current Iref	A	5A	5	5
Current Imin	A	0.25A	0.25	0.25
Operating range current (Ist ... Imax) direct connection	A	0.020 ... 80 or 125	0.020 ... 125	0.020 ... 125
Operating frequency	Hz	44 ... 66	44 ... 66	44 ... 66
Differential	%	1	1	1
<b>Pulse output SO</b> acc.to EN 62053-31				
Pulse output for active and reactive energy T1 and T2		yes		
Pulse quantity	imp/kWh	500		
Pulse duration	ms	30 or 50		
Required voltage	V AC (DC)	5 ... 230 ±5% (5 ... 300) min. (max)		
Permissible current pulse ON (max. 230V AC/DC)	mA	90		
Permissible current Impulse OFF (leakage cur. max. 230V AC/DC)		1		
<b>Embedded communication</b>				
Modbus RTU RS-485 - 3 wires	µA bps	up to 38.400	-	
M-Bus RS-485 - 2 wires	bps	-	up to 9.600 bps	
<b>Safety acc. to EN 50470-1</b>				
Degree of pollution		2	2	2
Operational voltage	V AC	300	300	300
AC voltage test (EN 50470-3, 7.2)	kV	4	4	4
Impulse voltage test	1.2/50 µs-kV	6	6	6
Protection class (EN 50470)	class	II	II	II
Housing material flame resistance UL 94	class	V0	V0	V0
<b>Environmental conditions</b>				
Operating temperature	°C	-10 ... +55	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage	°C	-25 ... +70	-25 ... +70	-25 ... +70
Relative humidity (not condensation)	%	≤80	≤80	≤80
Degree protection housing when mounted in front (terminal)		IP51(*)/IP20	IP51(*)/IP20	IP51(*)/IP20

(\*) For the installation in a cabinet at least with IP51 protection.

## Product Codes

Description	Comm	DIN mod.	Part number
LCD kWh/kVArh, 2 tariffs, 2SO, 80A - MID	pulse	3	DRM-80-1P
LCD kWh/kVArh, 2 tariffs, 2SO, 125A - MID	pulse	3	DRM-125-1P
LCD kWh/kVArh, 2 tariffs, 2SO, 125 Amp - MID Modbus	Modbus RTU	3	DRM-125-1P-MOD
LCD kWh/kVArh, 2 tariffs, 2SO, 125 Amp - MID M-Bus	M-Bus	3	DRM-125-1P-M
<b>Optional communication Interfaces</b>	M-Bus	1	DRM-M
	EIB-KNX	1	DRM-KNX
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

## Dimensions

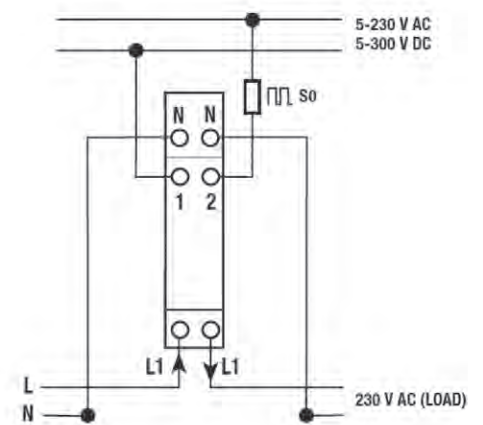
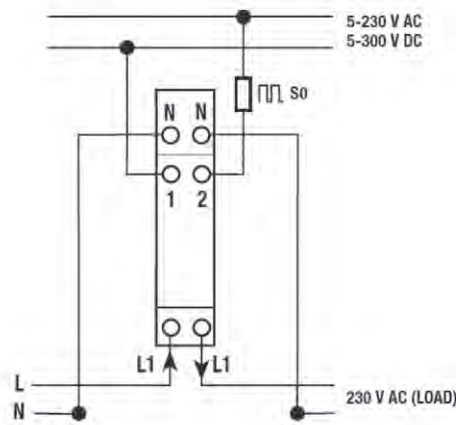
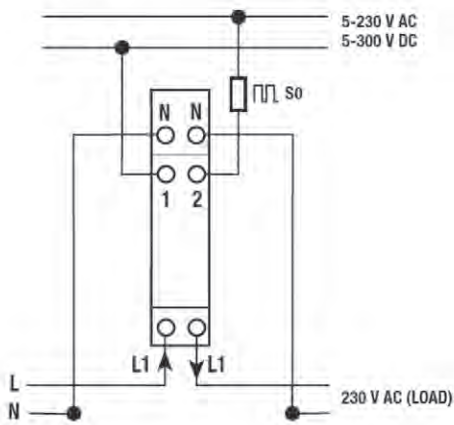


## Connections

DRM-80-1P  
DRM-125-1P

DRM-125-1P-MOD

DRM-125-1P-M



DRM - 80 - 1P (-\*) - 80A fuse is recommended for the line protection.

DRM - 125 - 1P (-\*) - 125A fuse is recommended for the line protection.



# DRM ENERGY-METERS THREE-PHASE CT 5A/80A/125A



## Features

- Blue backlit LCD
- For direct connection 80A/125A, or for transformer .../5A
- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 8 digits - 8 display for eight energy values indication
- Detection of connection errors (phase transposition)
- Accuracy class 1 for active energy and power according to EN 50470-3 (B)
- Accuracy class 2 for reactive energy and power according to EN 62053-23
- Operating range current (Ist ... I<sub>max</sub>.) for direct connection 80A = 0.015 ... 80A/125A - 0.020...125A for connection by CT .../5A = 0.003 ... 5A
- The standard versions are designed to be combined with the communication module
- Energy register for import and export
- Instantaneous active and reactive power display
- Sealable terminal covers
- 4 DIN modules wide (72mm) 5A/80A /6 DIN 108 modules wide 125A

- ▶ Direct connection 80A/125A
- ▶ Connection through CT .../5A up to 10.000/5A

Digital meter to register active energy, both imported and exported, and to measure current, voltage, active and reactive power, frequency and power factor, with IR communication side port.

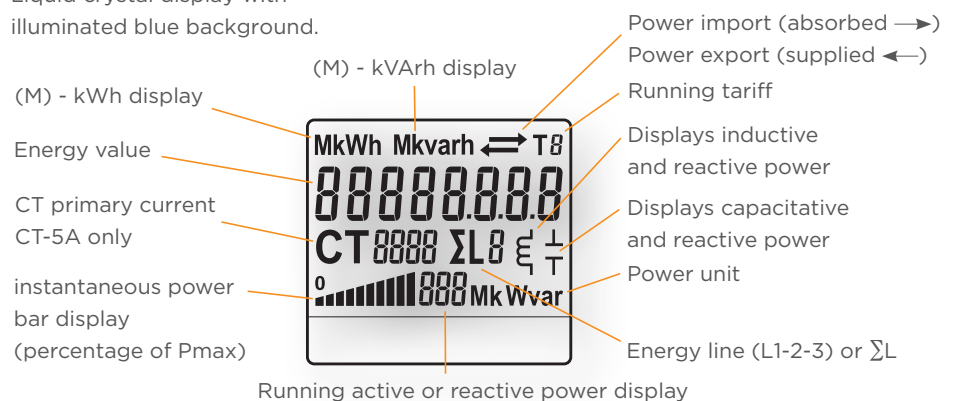
A three phase energy meter with an 8 digit, 2 decimal, display showing the total energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 Tariffs.

## Parameters

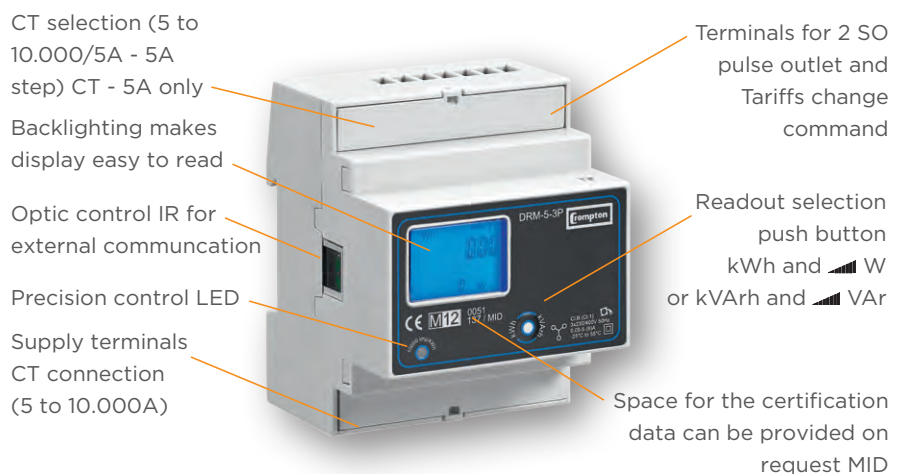
Display		Unit	ID
Active energy	Tariff 1	kWh	Energy imported and exported
	Tariff 2	kWh	Energy imported and exported
Reactive energy	Tariff 1	kVAh	Energy imported and exported
	Tariff 2	kVAh	Energy imported and exported
Active power		(M-k)-W	Utilization and instantaneous value
Reactive power		(M-k)-VAR	Utilization and instantaneous value
Connection errors			Phase Err
Primary transformer	5 ... 9999	A	CT (current transformer) (CT 5A only)

## Display

Liquid crystal display with illuminated blue background.



## 4 standard module housing, suitable for DIN-rail mounting Connection through CT .../5A up to 10.000/5A



## Technical Data

Display			DRM - 80 - 3P direct connection 80A	DRM - 5 - 3P CT connection up to 10.000/5A	DRM - 125 - 3P direct connection 125A
<b>Supply</b>					
Rated control supply voltage Un		V AC	230	230	230
Operating range voltage		V	184 ... 276	187 ... 276	184 ... 276
Rated frequency fn		Hz	50	50	50
Rated power dissipation (max. for phase) Pv		VA (W)	≤8 (0.6)	≤8 (0.6)	≤8 (0.6)
<b>Overload capability</b> Voltage Un	continuous; phase/phase	V AC	480	480	480
	1 second: phase/phase	V AC	800	800	800
	continuous; phase/N	V AC	276	276	276
	1 second: phase/N	V AC	300	300	300
Current Imax	continuous	A	80	6	125
	momentary (0.5 s)	A	-	120	-
	momentary (10 ms)	A	2400	-	3750
<b>Display (readouts)</b>					
Connection errors and phase out	discernible from phase-sequence indic.	-	Phase Err	Phase Err	Phase Err
Display type	LCD	n° digits	8 (2 decimal)	8 (2 decimal)	8 (2 decimal)
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3	6.00 x 3
Active energy: 1 display, 8 digit + display import or export (arrow)	tariffs 2	kWh	0.01	0.01	0.01
	overflow	kWh	999999.99	999999.99	999999.99
Reactive energy: 1 display, 8-digit + display import or export (arrow)	tariffs 2	kVArh	0.01	0.01	0.01
	overflow	kWh	999999.99	999999.99	999999.99
Instantaneous active power: 1 display, 3-digit		W, kW or MW	000 ... 999	000 ... 999	000 ... 999
Instantaneous reactive power: 1 display, 3-digit		VAr, kVAr or MVar	000 ... 999	000 ... 999	000 ... 999
Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2	T1 or T2
Transformer primary current		A	-	5 ... 10.000	
Display period refresh		s	1	1	1
<b>Measuring accuracy</b>					
Active energy and power	acc.to EN 50470-3	class 1	B (1%)	B (1%)	B (1%)
Reactive energy and power	acc.to EN 62053-23	class 2	2%	2%	2%
<b>Measuring type</b>					
Type of connection			direct	transformer .../5A	direct
Voltage Un	phase/phase	V AC	400	400	400
	phase/N	V AC	230	230	230
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	184 ... 276	184 ... 276
Current Iref		A	5	-	5
Current In		A	-	5	-
Current Imin		A	0.25	0.05	0.25
Operating range current (Ist ... Imax)	direct connection	A	0.015 ... 80	-	0.02 ... 125
	transformer connection (CT)	A	-	0.003 ... 6	
Frequency		Hz	50 ±2%	50 ±2%	50 ±2%
Operating frequency		Hz	44 ... 66	44 ... 66	44 ... 66
Differential		%	1	1	1
Input waveform		-	sinusoidal	sinusoidal	sinusoidal
Starting current for energy measurement (Ist)		mA	15	3	20

## Technical Data

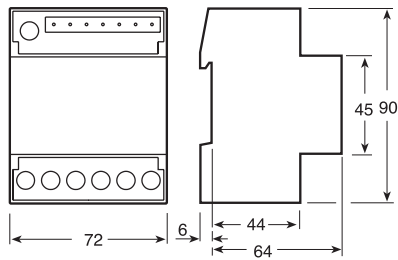
Display		DRM - 80 - 3P direct connection 80A	DRM - 5 - 3P CT connection up to 10.000/5A	DRM - 125 - 3P direct connection 125A
<b>Pulse output SO</b> Acc.to EN 62053-31				
Pulse output	for act. and react. energy T1 and T2	-	yes	yes
Quantity pulse output	for direct connection 80A depending on the transf. factor.	Imp/kWh Imp/kWh	500 -	- 500
Pulse duration		ms	30 or 50 ±2	30 or 50 ±2
Required voltage	min. (max.)	V AC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
Permissible current	pulse ON (max. 230V AC/DC)	ma	90	90
Permissible current	pulse OFF (leak. cur. max. 230V AC/DC)	µA	1	1
<b>Optical interface</b>				
Front side (accuracy control)	LED	Imp/kWh	1000	10.000
<b>Safety acc. to EN 50470-1</b>				
Indoor meter		-	yes	yes
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance UL 94		class	V0	V0
Safety-sealing between upper and lower housing part (mod. 282331-282141)		-	yes	yes

## Product Codes

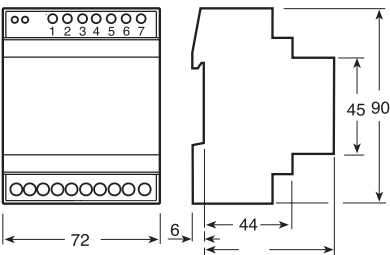
Description	Comm	DIN mod.	Part number
LCD kWh/kVArh ../5A, 2 tariffs, 2SO - MID	pulse	4	DRM-5-3P
LCD kWh/kVArh 80A, 2 tariffs, 2SO - MID	pulse	4	DRM-80-3P
LCD kWh/kVArh 125A, 2 tariffs, 2SO - MID	pulse	6	DRM-125-3P
<b>Optional communication Interfaces</b>	M-BUS	1	DRM-M
	EIB-KNX	1	DRM-KNX
	Modbus-RTU RS485	1	DRM-MOD
	SD card datalogger	1	DRM-LOG
	Power supply transformer for datalogger	1	DRM-LOG-PS

## Dimensions

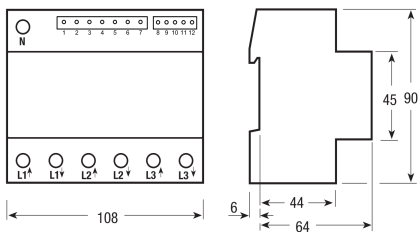
DRM-80-3P



DRM-5-3P

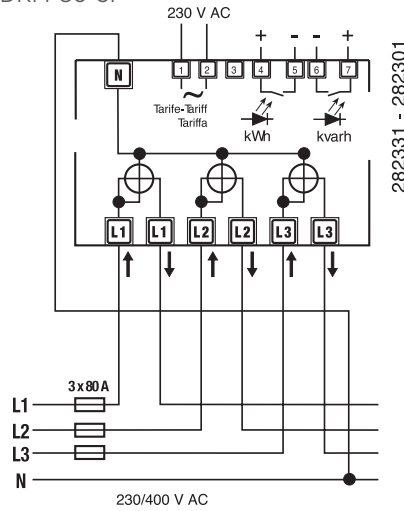


DRM-125-3P



## Circuit diagrams

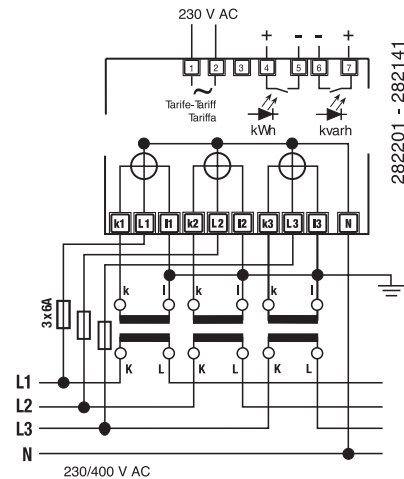
DRM-80-3P



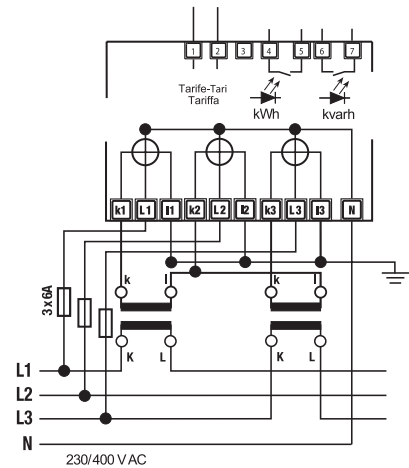
282331 - 282301

A fuse of 80A is recommended for the line protection.

DRM-5-3P

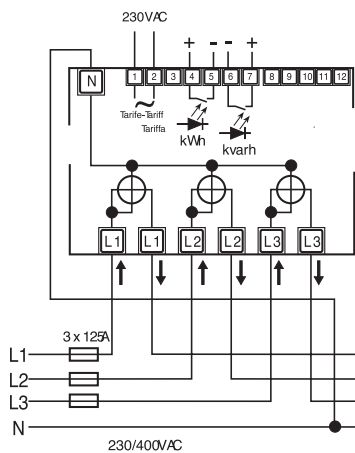


282201 - 282141



A fuse of 6A is recommended for the line protection. Current transformers must not be operated with open terminals since dangerous high voltages might occur which may result in personal injuries and property damage. In addition to this, the transformers are exposed to thermal overload.

DRM-125-3P



A fuse of 125A is recommended for the line protection. Wire N needs to be connected to the meter.

# MODBUS INTERFACE RTU AND ASCII



## Features

- Interface available:
  - type: for energy, power, voltage, current, cos and frequency, etc.
- Modbus Ascii and Modbus RTU protocols
- Suitable for both single-phase and three-phase energy-meter
- 1 DIN module wide (18mm)



## Additional communication modules for energy-meter

The product is intended to be placed side by side to an energy meter, equipped with an infra-red port on the side, to collect the measurements data from the instrument and to transmit them via an RS-485 serial line to a remote collection station using Modbus protocol.

The communication module automatically recognizes the instrument connected to its infra-red port and is in the position to transmit all the data provided by the instrument itself.

## Configuration

Modbus RTU or Ascii communication protocols are supported. Suitable for both single-phase and three-phase energy-meters. Refer to the technical guide for further information.

## Plug and play

The interface is enabled to recognize automatically the instrument connected to its infra-red port. This is an advantage in terms of flexibility, because the same interface can be connected, to single-phase or three-phase energy meters

## Measurements

The interface acts as a Modbus slave, so that the transmitted measurements can be collected and displayed using one of the software tools available on the market enabled to act as a Modbus master.

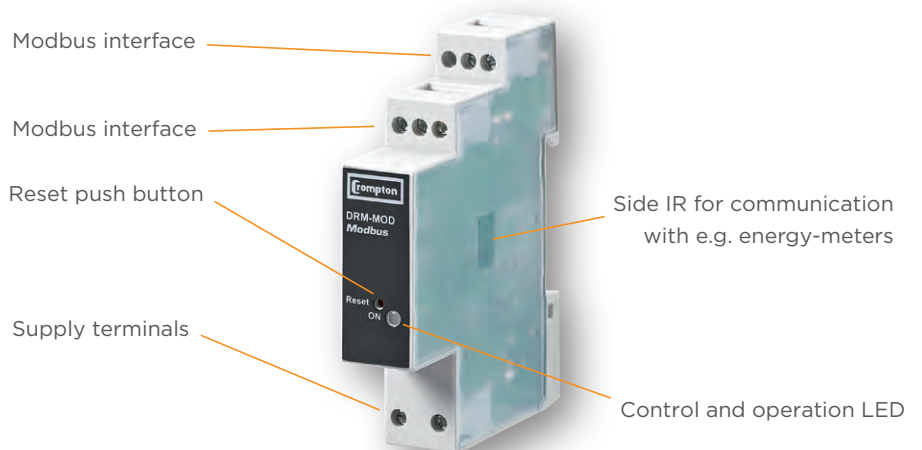
## Baudrate

The interface is enabled to operate with a number of baudrates, up to 115200 baud.

The pure speed of transmission is limited by the band capacity which is 9600 baud on the IR interface:

## 4 standard module housing, suitable for DIN-rail mounting Connection through CT .../5A up to 10.000/5A

### ► Modbus RTU and Ascii interface



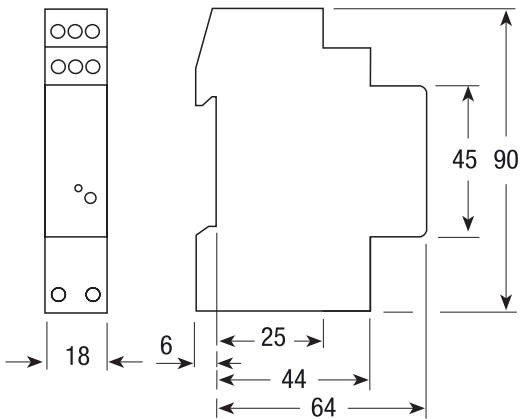
## Technical Data

Display		DRM - MOD
<b>Power supply</b>		
Auxiliary voltage rating Un	V AC	230
Auxiliary power rating	VA	10
Auxiliary voltage range	V AC	0.80 ... 1.20 x Un
Frequency rating	Hz	50/60
Frequency range	Hz	45 ... 65
<b>Operating features</b>		
Protocol selectable by software	-	Modbus RTU or Ascii
Suitable for both single-phase and three-phase energy-meter, network analyser and power-meters	-	yes
<b>Modbus interface</b>		
	RS 485	3 (+/-, cable shield)
Input resistance	UL (kΩ)	1 (12)
Termination resistance	Ω	180
Communication protocol (selectable by software)	-	Modbus Ascii - Modbus RTU
Data transfer speed	baud	≤38.400 - default 19200
Parity	-	none/even - default: none
Addressing	-	1 to 247
<b>Interface to measuring instrument</b>		
Optical IR	n°	2 (Tx, Rx)
<b>Environmental conditions</b>		
Operating temperature	°C	-10 ... +55
Limit temperature of storage	°C	-25 ... +70
Relative humidity	%	≤80
Protection class acc.to IEC 60950	-	II
Degree of protection when front panel mounted (term.)	-	IP20

## Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	Modbus-RTU RS485	1	DRM-MOD

## Dimensions



# M-BUS INTERFACE



## Features

- Interface for energy, power, voltage, current, cos and frequency, etc.
- M-Bus according to EN1434
- Suitable for both single-phase and three-phase energy-meter, network analyser and power-meters
- 1 DIN module wide (18mm)



Additional communication modules for energy-meter

The M-Bus interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to M-Bus. M-Bus is a standard widely used for remote reading of various types of consumption meters and sensors. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the meter itself, and gets the power supply from the bus, so that only the bus wiring (a two-wire standard telephone cable) must be connected, no additional wiring is required. The interface is suitable for both single-phase and three-phase energy-meter.

## Measurements

M-bus interface is for remote reading of all of the energy, power, voltage, current, frequency, power factor registers. Status byte are available as well, containing information about the status of the energy-meter (running tariff nominal, voltage and current range overflow).

## Commands

Commands can be sent via M-Bus to the interface for resetting the energy accounts. Commands are enabled only on relevant measuring instruments models.

## Cable length M-Bus according to EN13757-2 Annex E Baudrate

- Shielded telephone cable 0.5mm<sup>2</sup> (0.8mm) (typ. 4x0.8mm)
- NYM-cable (1.5mm<sup>2</sup> standard cable)

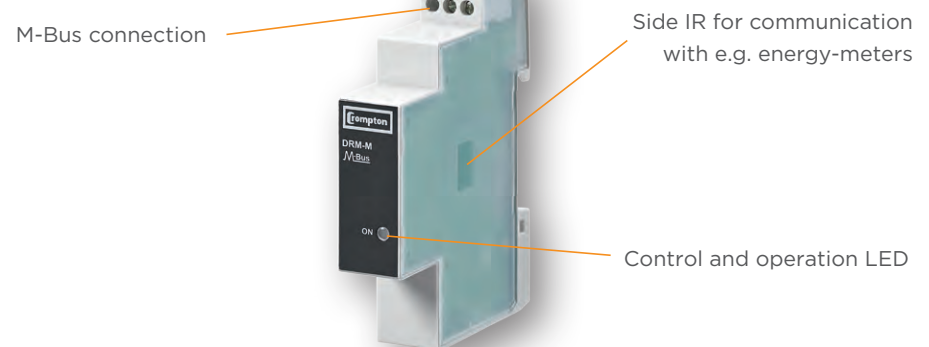
Using telephone cables with an diameter of 0.6mm either the max. length or the number of slaves must be reduced by factor 2!

## Cable Length

Type	Installation	Distance (resistive cable length)	Total length of segment wiring	Cable type (diameter)	Number of slaves (unit loads)	max. Baudrate
A	small in house installation	350m	1.000m (<30 Ohm)	0.5mm <sup>2</sup> (0.8mm)	250 64	9.600 Baud 38.400 Baud
B	large in house installation	350m	4.000m (<30 Ohm)	0.5mm <sup>2</sup> (0.8mm)	250 64	2.400 Baud 9.600 Baud
C	small wide area net	1.000m	4.000m (<90 Ohm)	0.5mm <sup>2</sup> (0.8mm)	64	2.400 Baud
D*	large wide area net	3.000m	5.000m	1.5mm <sup>2</sup> (1.4mm)	64	2.400 Baud
	Point to Point	10.000m	10.000m	1.5mm <sup>2</sup> (1.4mm)	1	300 Baud

1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm

### ► M-Bus interface



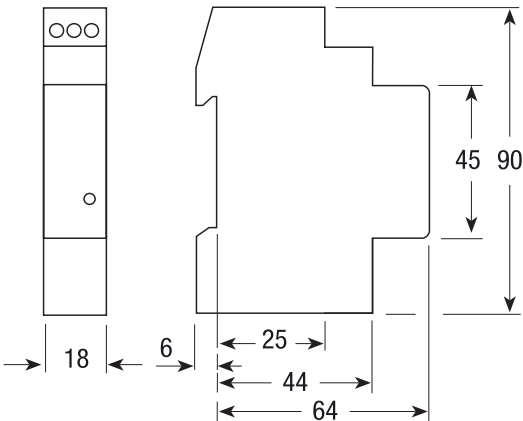
## Technical Data

Display		DRM - M
<b>Power supply</b> Power supply	-	through bus connection
<b>Operating features</b> Interface for energy, power, voltage, current, cos and frequency, etc. Suitable for both single-phase and three-phase energy-meter	-	yes
<b>M-Bus interface</b> HW interface	-	2 screw clamps
SW protocol	-	M-Bus according to EN1434
Baudrate	baud	300-9600
<b>Interface to measuring instrument</b> HW interface optical IR	n°	2 (Tx, Rx)
<b>Environmental conditions</b>		
Operating temperature	°C	-10 ... +55
Limit temperature of storage	°C	-25 ... +70
Relative humidity	%	≤80
Vibrations	sinusoidal vibration amplitude at 50 Hz	mm
Protection class	acc.to IEC 60950	-
Degree of protection	when front panel mounted (term.)	-

## Product Codes

Description	Comm	DIN mod.	Part number
Optional communication interfaces	M-BUS	1	DRM-M

## Dimensions





# KNX INTERFACE



## Features

- Interface for energy register and power measurements, etc.
- Communication in compliance with KNX standard for home and building control
- Configuration via ETS3
- Energy registers transmitted as float values (EIS9)
- Suitable for both single-phase and three-phase energy-meter
- 1 DIN module wide (18mm)



## Additional communication modules for energy-meter

The KNX interface (1 module wide, DIN rail mount) is intended for connecting the energy meter to KNX bus. KNX bus is widely used for home and building control applications. The interface receives the measurement data from the energy meter by means of the infrared port available on the side of the energy meter itself, and gets the power supply from the bus. Only the bus wiring (twisted pair) must be connected, no additional wiring is required. The interface is suitable for both single-phase and three-phase energy-meter.

## Configuration

The interface is provided with an application program to be imported in ETS3, in order to allow the configuration of the communication. ETS3 is the standard software for KNX systems configuration.

## Measurements

All the active and reactive energy, voltage, current, active, reactive, apparent power, power factor, frequency registers available on the measuring instrument can be transmitted over the bus. Transmission modes are available: transmission on request, automatic transmission based on adjustable energy account increment (for instance a message every 10 KWh). Status bytes are available as well, containing information about the status of the energy meter and the load (load type, running Tariff, energy import or export and so on). (Some measurements and status information are available only on selected models).

## Voltage limits

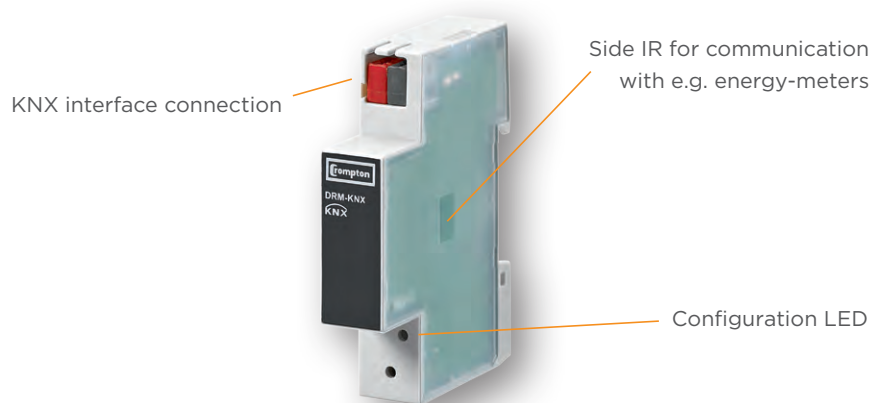
Upper and lower voltage limits can be set via ETS3. A warning message will be sent over the bus by the interface, in case the voltage value goes beyond the limits.

## Energy reset

Commands can be sent via bus to the interface for resetting the energy accounts (enabled only on selected measuring instruments models).

**1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm.**

- ▶ KNX interface





# SD CARD DATALOGGER



## Features

- The SD card memory from 1 to 8 gigabytes
- Suitable for both single-phase and three-phase energy-meter.
- 1 DIN module wide (18mm)



## Front Panel

Three green LEDs notify the communication state, the recording state and the SD card:

- • LED blinking
  - • LED ON
  - • LED OFF
  - • LED irrelevant
- |       |  |
|-------|--|
| REC ● | ● • The recording will start within 8 seconds; don't pull the SD card. |
| MEM ● | ● • The SD card is full.   |
| I/R ● | ● • The recording is started; don't pull the SD card.                  |
| REC ○ | ● • Is allowed to pull the SD card.                                    |
| MEM ● | ● • Less than 25% of memory is available.                              |
| I/R ○ | ● • The IR communication with meter is active.                         |
| REC ● | ● • No communication is being.   |
| MEM ● |  |
| I/R ● |  |

## Additional communication modules for energy-meter

The SD card module is DIN-rail-mounting (1 DIN module, 17.5mm); it receives data from an MID approved energy meters through the infra-red interface. Its purpose is to store data (a configurable set of data) coming from the MID approved energy meters with Tapko protocol syntax into a removable SD card. The size of the SD card and the interval period between 2 records storage are also configurable. The power supply is provided by means of a IMQ safety approved DIN rail mounted transformer (1 DIN module, 17.5mm, 230V AC /12V AC - 4 VA).

In case the whole set of data is stored in each record, it is possible to store approx 1.250.000 records per gigabyte. The smaller the number of data per record, the larger the number of records that the module can store inside the SD card. The SD- card can be removed from the module at any time and inserted in a PC with suitable reader to access the saved data. The format is an CSV file.

The SD card is inserted in factory inside its receptacle on the front side of the SD card module. Inside the SD card a configuration file is written, thus allowing the selection of the parameters to be saved, of the rate of recording, etc. In case SD-module detects the presence of an SD card without any configuration file, it assumes that the dimension is 1 Gigabyte, the rate of recording is 5 minutes, the time/date is 00:00:00 01/01/2010 and the set of data is the main energies group. The module can manage SD cards of 1G, 2G, 4G and 8G sizes.

## Meaning of LED

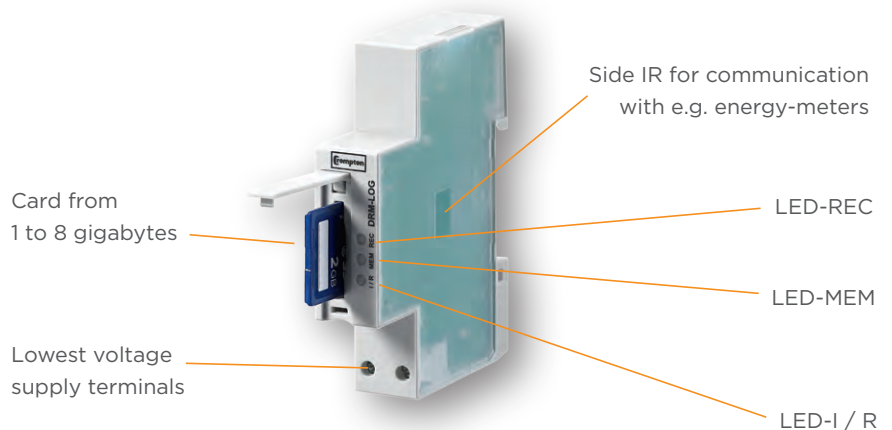
I / R-LED is the reference of IR communication with meter. REC-LED blinks for 8 seconds before a registration is performed on the memory. During registration the LED stays continuously on; in this status the memory shall not be extracted from device in order to not ruin the integrity of saved data MEM-LED is normally off and gets turned on in case less of 25% of memory is available When memory is full, LED-REC and MEM blink.

## Maximum number of records

If the whole set of data is selected, it is possible to store approximately 1.250.000 records for each gigabyte, and, if the minimum rate (30 seconds) is selected, each gigabyte ensures 3 years and 9 months of storage. If the storage frequency decreases, the SD card filling time increases; for example: selecting the whole set of data and selecting 1 minute, each gigabyte ensures 7.5 years of storage.

## 1 standard module housing (18mm wide), suitable for DIN-rail mounting 35mm

- ▶ SD card Datalogger



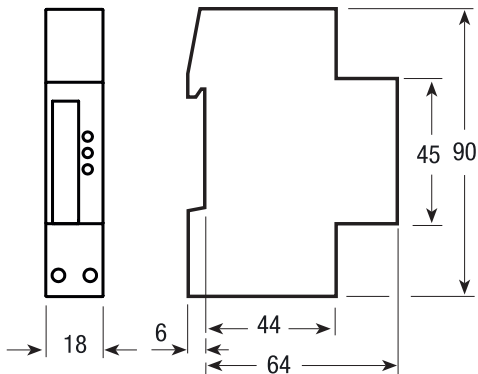
## Technical Data

Display		DRM - LOG
<b>Power supply</b>		
Voltage rating (DRM-LOG-PS)	V AC/DC	12 ... 24
Frequency range	Hz	44 ... 66
<b>Operating features</b>		
SD card memory	-	1 to 8 Gigabytes
Suitable for both single-phase and three-phase energy-meter, Network analyser and power-meters	-	yes
<b>Interface to measuring instrument</b>		
HW interface optical IR	n°	2 (Tx, Rx)
<b>Environmental conditions</b>		
Operating temperature	°C	-10 ... +55
Limit temperature of storage	°C	-25 ... +70
Relative humidity	%	≤80
Protection class acc.to IEC 60950	-	II
Degree of protection when front panel mounted (term.)	-	IP20

## Product Codes

Description	Comm	DIN mod.	Part number
	SD card datalogger	1	DRM-LOG
Optional communication interfaces	Power supply transformer for datalogger	1	DRM-LOG-PS

## Dimensions



## Power supply transformer



# DRB ENERGY-METERS THREE-PHASE - BASIC



- ▶ Direct connection 80A
- ▶ Connection through CT .../5A up to 10.000/5A

Digital meter to register active energy, both imported and exported, with 2 SO pulsed outputs for remote monitoring of active and reactive energies on both tariffs.

Digital energy-meters with LCD display measure active energy in three-phase systems in residential, utility and industrial application.

Monitors energy consumption via Modbus RTU or M-Bus communication.

## Parameters

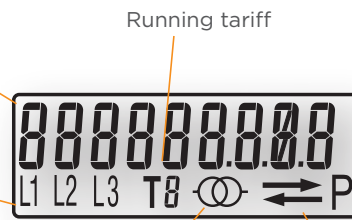
Display		Unit	ID
Active energy	Tariff 1	kWh	Energy imported and exported
	Tariff 2	kWh	Energy imported and exported
Active energy "partial"	Tariff 1	kWh	Energy imported and exported (Modbus/M-Bus versions only)
	Tariff 2	kWh	Energy imported and exported (Modbus/M-Bus versions only)
Phase disconnection			Phase Err
Active phases			L1 - L2 - L3
Primary transformer	5 ... 10.000/5	A	CT (current transformer)

## Display

Liquid crystal display

Energy display

Phase error  
Lin in use  
(L1-L2-L3)



CT primary current

Power import (absorbed →)  
Power export (supplied ←)

## BASIC DRB Energy Meters Overview

Product code	MID certified	Single-phase	Three-phase	Module width	CT feed (5A)	Direct connection 32A	Direct connection 40A	Direct connection 80A	Direct connection 125A	Option connection interface	Modbus built in	M-Bus built in	Two tariff T1 & T2	Pulse output (SO)	Catalogue page
DRB-5-3P	X		X	4	X								X	X	22
DRB-80-3P	X		X	4				X					X	X	22
DRB-5-3P-M	X		X	4	X							X	X		25
DRB-80-3P-M	X		X	4				X				X	X		25
DRB-5-3P-MOD	X		X	4	X						X		X		25
DRB-80-3P-MOD	X		X	4				X			X		X		25

# DRB ENERGY-METERS THREE-PHASE - BASIC CT 5A/80A



## Features

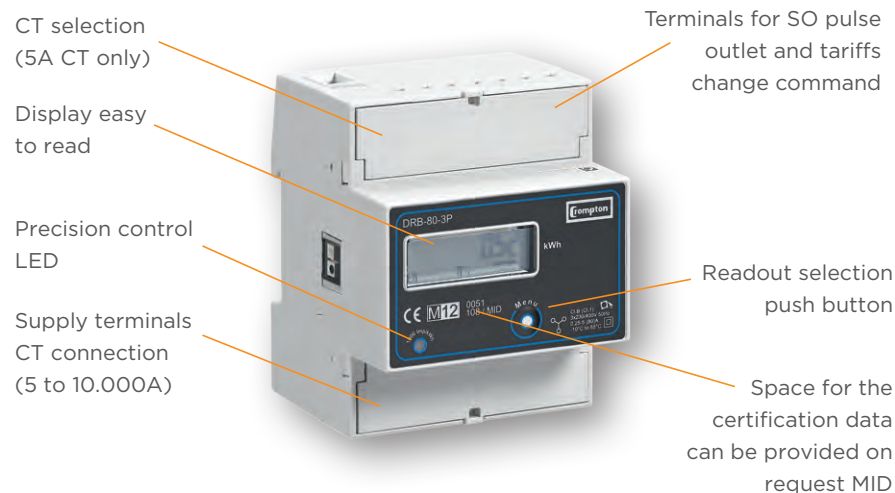
- For direct connection 80A, or for transformer .../5A
- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 9 digits - 4 display for energy values indication
- Detection of connection errors (phase transposition and phase missing)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Operating range current (Ist ... I<sub>max</sub>) for direct connection 80A = 0.015 ... 80A for connection by CT .../5A = 0.003 ... 5A
- Energy register for import and export
- Sealable terminal covers
- 4 DIN modules wide (72mm)

- ▶ Direct connection 80A
- ▶ Connection through CT .../5A upto 10.000/5A

Digital active energy-meter for imported and exported energy - 2 tariffs - 2 SO.

A three-phase active energy meter with a 9 digit, 2 decimal, display showing the total active energy reading. The meters have 2 SO outputs generating pulses for remote processing of active and reactive energy and 2 tariffs.

4 standard module housing, suitable for DIN-rail mounting  
 Connection through CT .../5A upto 10.000/5A or direct connection upto 80A



## Technical Data

Display		DRB - 80 - 3P direct connection 80A	DRB - 5 - 3P CT connection up to 10,000/5A
<b>Supply</b>			
Certified voltage range U <sub>n</sub>	V AC	230	230
Operating voltage range	V AC	184 ... 276	184 ... 276
Certified frequency f <sub>n</sub>	Hz	50	50
Operating frequency range	Hz	44 ... 66	44 ... 66
Rated power dissipation (max.) P <sub>v</sub>	VA (W)	≤8 (0.6)	≤8 (0.6)
<b>Overload capability</b>			
Voltage U <sub>n</sub>	continuous; phase/ phase		
	1 second: phase/phase	V AC 800	800
	continuous; phase/N	V AC 276	276
	1 second: phase/N	V AC 300	300
Current I <sub>max</sub>	continuous	A 80	6
	momentary (0.5 s)	A -	120
	momentary (10 ms)	A 2400	-
<b>Display (readouts)</b>			
Connection errors and phase out discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
Display type	LCD	n° digits 9 (2 decimal)	9 (2 decimal)
	digit dimensions	mm x mm 6.00 x 3	6.00 x 3
Active energy: 1 display, 9 digit - 2 tariffs	min. measuring energy	kWh 0.01	0.01
+ display import or export (arrow)	max. measuring overflow	kWh 9999999.99	9999999.99
Instantaneous tariff measurement	1 display, 1-digit	- T1 or T2	T1 or T2
Transformer primary current	A	-	5 ... 10.000
Display period refresh	s	1	1

## Technical Data

Display			DRB - 80 - 3P direct connection 80A	DRB - 5 - 3P CT connection up to 10,000/5A
<b>Measuring accuracy</b>				
Active energy	acc.to EN 50470-3	class 1	B	B
<b>Measuring input</b>				
Type of connection			direct	transformer .../5A
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	184 ... 276
Current Iref		A	5	-
Current In		A	-	5
Current Imin		A	0.25	0.05
Operating range current (Ist ... Imax)	direct connection	A	0.015 ... 80	-
	transformer connection (CT)	A	-	0.003 ... 6
Transformer current	primary current of the transformer	A	-	5 ...10.000
	smallest input step adjus. in 5A steps	A	-	5
Frequency		Hz	49 ... 51	48 ... 62
Operating frequency		Hz	44 ... 66	44 ... 66
Differential		%	1	1
<b>Pulse output SO</b>	acc.to EN 62053-3 for active energy T1 and T2	-	yes	yes
Pulse output				
Quantity pulse output	for direct connection 80A	Imp/kWh	500	-
	depending on the transf. factor.	Imp/kWh	-	100-10-1
Pulse duration ms 30 or 50 32		ms	30 ±2	30 ±2
Required voltage	min. (max.)	V AC (DC)	5 ... 230 ±5% (5 ... 300)	5 ... 230 ±5% (5 ... 300)
<b>Safety acc. to EN 50470-1</b>				
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance UL 94		class	V0	V0
<b>Environmental conditions</b>				
Operating temperature (on request -25 ... +55 °C )		°C	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
Relative humidity (not condensation)		%	≤80	≤80
Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

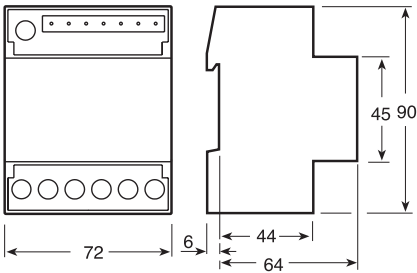
(\*) For the installation in a cabinet at least with IP51 protection.

## Product Codes

Description	Comm	DIN mod.	Part number
LCD kWh ../5A, 2 tariffs, 2S0	pulse	4	DRB-5-3P
LCD kWh 80A, 2 tariffs, 2S0	pulse	4	DRB-80-3P

## Dimensions

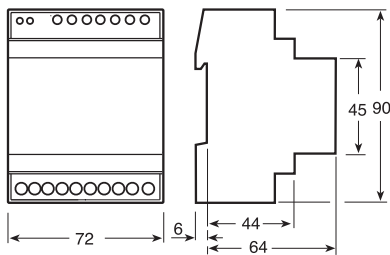
DRB-80-3P



An 80A fuse is recommended for the line protection.

## Dimensions

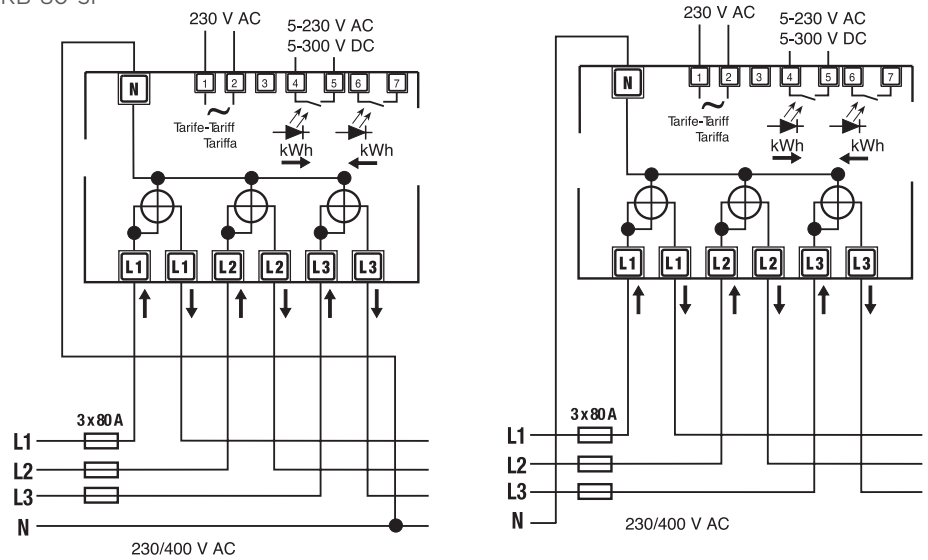
DRB-5-3P



A 6A fuse is recommended for the line protection. Current transformers must not be operated with open terminals as dangerous high voltages might occur and may result in personal injuries and property damage. Transformers are exposed to thermal overload.

## Circuit diagrams

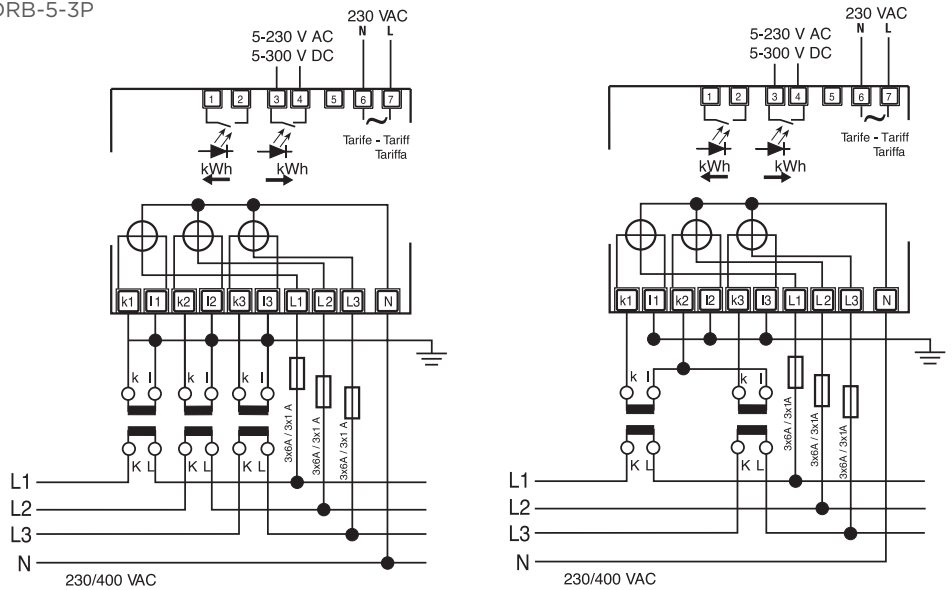
DRB-80-3P



Wire N needs to be connected to the meter

## Circuit diagrams

DRB-5-3P



Wire N needs to be connected to the meter



# DRB ENERGY-METER THREE-PHASE - BASIC CT 5A/80A WITH BUILT-IN COMMUNICATION



## Features

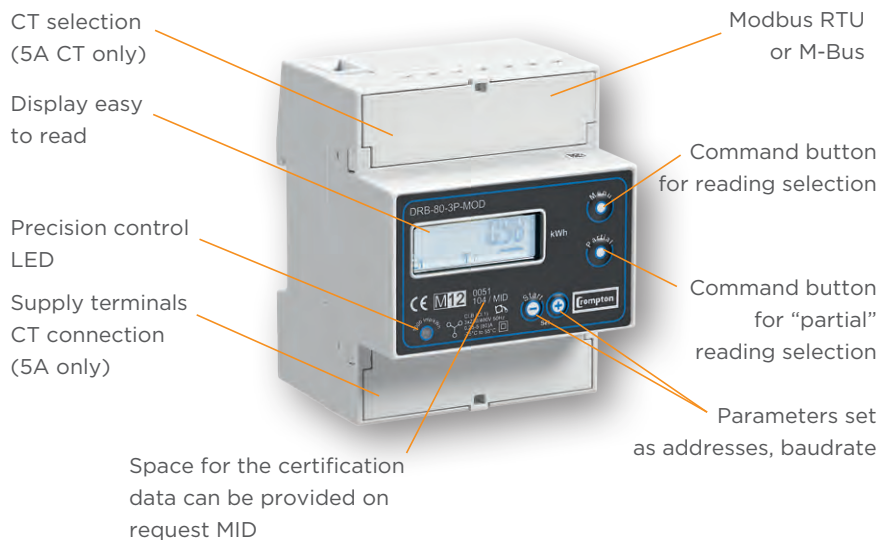
- For direct connection 80A, or for transformer .../5A
- For transformer primary current of 5A to 10.000/5A. Input is in 5A increments
- 9 digits for four energy totalized values
- Detection of connection errors (phase transposition and phase missing)
- Accuracy class 1 for active energy according to EN 50470-3 (B)
- Operating range current (Ist ... I<sub>max</sub>) for direct connection 80A = 0.015 ... 80A for connection by CT .../5A = 0.003 ... 5A
- Energy register "Partial kWh" resettable\* for Modbus /M-Bus versions only
- Sealable terminal covers
- 4 DIN modules wide (72mm)

- ▶ Direct connection 80A
- ▶ Connection through CT .../5A up to 10.000/5A
- ▶ Built-in Modbus RTU or M-Bus

Digital meter to register active energy, both imported and exported, with built-in communication of either Modbus or M-Bus allowing remote access to active, reactive power and energies on both tariffs.

A three-phase active energy meter with a 9 digit, 2 decimal-display showing the total active energy reading. The meters have 2 SO outputs and 2 tariffs that are managed through intergral communications on the meter via Modbus RTU or M-bus interface.

4 standard module housing, suitable for DIN-rail mounting  
 Connection through CT .../5A up to 10.000/5A or direct connection up to 80A with built in connections (Modbus/M-Bus)



## Technical Data

Display		DRTB-5-3P-M DRB-5-3P-MOD CT connection upto 10.000/5A built-in communication Modbus/M-Bus	DRB-80-3P-M DRB-80-3P-MOD direct connection to 80A built-in communication Modbus/M-Bus
<b>Supply</b>			
Certified voltage range U <sub>n</sub>	V AC	230 ±20%	230 ±20%
Operating voltage range	V AC	184 ... 276	57 ... 100/276 ... 480
Certified frequency f <sub>n</sub>	Hz	50 ±2%	50 ±2%
Operating frequency range	Hz	44 ... 66	44 ... 66
Rated power dissipation (max.) P <sub>v</sub>	VA (W)	≤8 (0.6)	≤8 (0.6)
<b>Overload capability</b>			
Voltage U <sub>n</sub>	continuous; phase/phase	V AC	480
	1 second: phase/phase	V AC	800
	continuous; phase/N	V AC	276
	1 second: phase/N	V AC	300
Current I <sub>max</sub>	continuous	A	80
	momentary (0.5 s)	A	-
	momentary (10 ms)	A	2400

## Technical Data

Display			DRB-80-3P-M DRB-80-3P-MOD direct connection to 80A built-in communication Modbus/M-Bus	DRB-5-3P-M DRB-5-3P-MOD CT connection upto 10.000/5A built-in communication Modbus/M-Bus
<b>Display (readouts)</b>				
Connection errors and phase out	discernible from phase-sequence indic.	-	PHASE Err	PHASE Err
Display type	LCD	n° digits	9 (2 decimals)	9 (2 decimals)
	digit dimensions	mm x mm	6.00 x 3	6.00 x 3
Active energy: 1 display, 9 digit - 2 tariffs	min. measuring energy	kWh	0.01	0.01
+ display import or export (arrow)	max. measuring overflow	kWh	9999999.99	9999999.99
Instantaneous tariff measurement	1 display, 1-digit	-	T1 or T2	T1 or T2
Transformer primary current		A	-	5 ... 10.000
Display period refresh		s	1	1
<b>Measuring accuracy</b>				
Active energy and power	acc.to EN 50470-3	class 1	B	B
<b>Measuring input</b>				
Type of connection			direct	transformer .../5A
Voltage Un	phase/phase	V AC	400	400
	phase/N	V AC	230	230
Operating range voltage	phase/phase	V AC	319 ... 480	319 ... 480
	phase/N	V AC	184 ... 276	57 ... 276
Current Iref		A	5	-
Current In		A	-	5
Current Imin		A	0.25	0.05
Operating range current (Ist ... Imax)	direct connection	A	0.015 ... 80	-
	transformer connection (CT)	A	-	0.003 ... 6
Transformer current	primary current of the transformer	A	-	5 ...10.000
	smallest input step adjus. in 5A steps	A	-	5
Operating frequency		Hz	44 ... 66	44 ... 66
<b>Safety acc. to EN 50470-1</b>				
Degree of pollution		-	2	2
Operational voltage		V AC	300	300
AC voltage test (EN 50470-3, 7.2)		kV	4	4
Impulse voltage test		1.2/50 µs-kV	6	6
Protection class (EN 50470)		class	II	II
Housing material flame resistance	UL 94	class	V0	V0
<b>Environmental conditions</b>				
Operating temperature (on request -25 ... +55 °C )		°C	-10 ... +55	-10 ... +55
Limit temperature of transportation and storage		°C	-25 ... +70	-25 ... +70
Relative humidity (not condensation)		%	≤80	≤80
Degree protection	housing when mounted in front (term.)	-	IP51(*)/IP20	IP51(*)/IP20

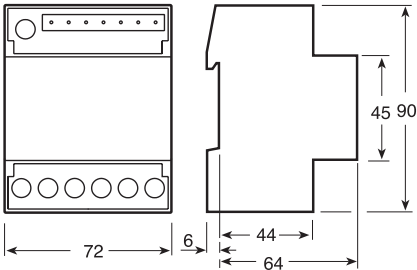
(\*) For the installation in a cabinet at least with IP51 protection.

## Product Codes

Description	Comm	DIN mod.	Part number
LCD kWh ../5A, 2 tariffs, NO zero setting - MID M-Bus	M-Bus	4	DRB-5-3P-M
LCD kWh 80A, 2 tariffs, NO zero setting - MID M-Bus	M-Bus	4	DRB-80-3P-M
LCD kWh ../5A, 2 tariffs, NO zero setting - MID Modbus	Modbus RTU	4	DRB-5-3P-MOD
LCD kWh 80A, 2 tariffs, NO zero setting - MID Modbus	Modbus RTU	4	DRB-80-3P-MOD

## Dimensions

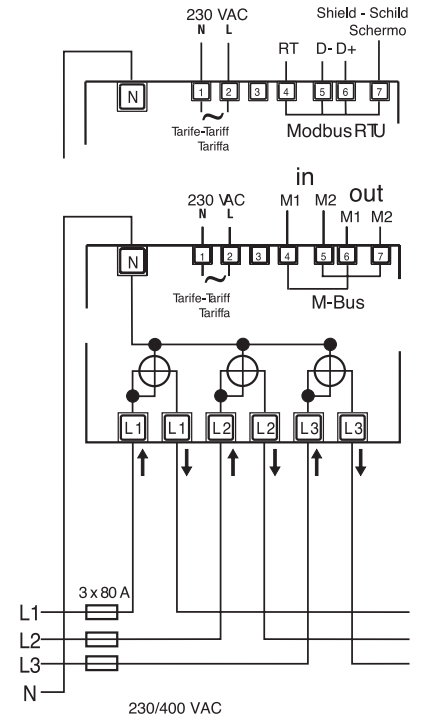
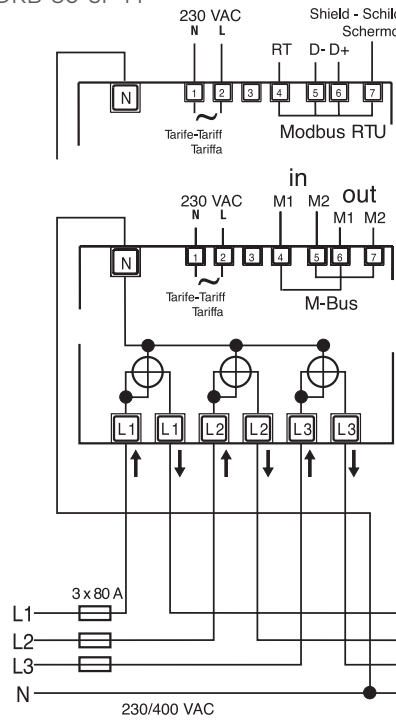
DRB-80-3P-MOD  
DRB-80-3P-M



An 80A fuse is recommended for the line protection.

## Circuit diagrams

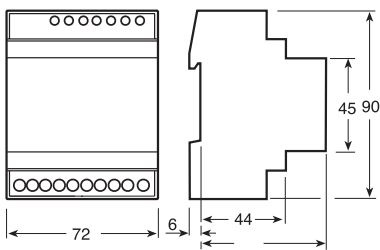
DRB-80-3P-MOD  
DRB-80-3P-M



Wire N needs to be connected to the meter

## Dimensions

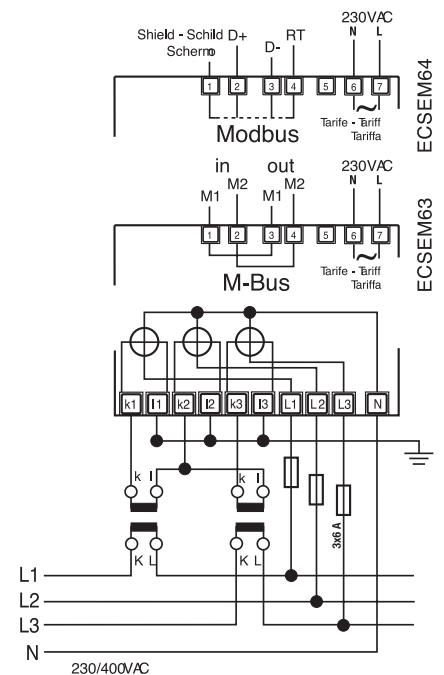
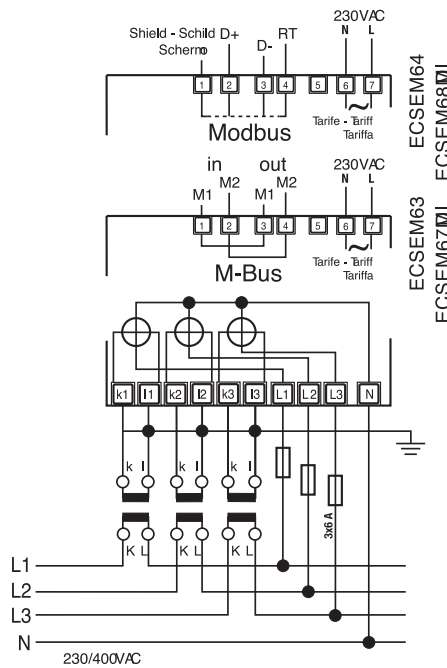
DRB-5-3P-MOD  
DRB-5-3P-M



A 6A fuse is recommended for the line protection. Current transformers must not be operated with open terminals as dangerous high voltages might occur and may result in personal injuries and property damage. Transformers are exposed to thermal overload.

## Circuit diagrams

DRB-5-3P-MOD  
DRB-5-3P-M



Wire N needs to be connected to the meter

## Panel fixing option

DR-96-3MOD-GRAY  
DR-96-4MOD-GRAY

# NETWORK CONVERTER FOR ENERGY METERS



## Features

- Internal Data Storage (2 GB)
- Network connection through RJ45
- Software included within the product (LAN Server)
- Suitable for single-phase and three-phase instruments on RS485 network
- Modbus TCP/IP data protocol
- HTTP support via internet browser
- Static or DHCP based addressing
- Dynamic DNS to maintain a host name, accessible on the internet, without the need for a static IP
- Internal RTC with NTP protocol support
- One LAN server for 31 single or three-phase devices
- Internet browser user interface
- 4 DIN modules wide (72 mm)

## Overview

The product collects data from different energy meters on a Modbus (RS-485) network and makes this data available in a variety of network compatible forms.

- Internal data storage
- Access via Modbus TCP/IP network
- LAN Server with internal software

## Connectivity

Each energy meter in the DRM and DRB range has a unique (internal) serial number. This allows the DRB-LAN-RS485 product to recognise different products on the RS485 network and access the measured parameters of these products.

## Date and time stamp

The DRB-LAN-RS485 product has an internal real time clock (RTC) to support event recording. The product is able to also support date/time synchronisation through NTP protocol.

## Data Storage

An internal micro SD-card can store 2 Gigabytes of data from the RS485 network.

The duration of data storage depends on three factors

- Number of parameters recorded from each device
  - Number of devices on the RS485 network
  - The time interval of each parameter
- Example: if all 50 parameters from 5 meters are stored every minute, the 2GB memory capacity is about two years.

## Modbus TCP/IP Network

The DRB-LAN-RS485 product can be connected to any 100Mbit LAN network via the RJ45 socket.

## LAN Server

The software within the DRB-LAN-RS485 product supports multiple languages and can be accessed using any internet browser connected on the network

## LAN Server Security

Access to the LAN Server can only be made with a valid Username and Password.

The product supports two levels of security.

- User - View devices and parameters
- Administrator - Network and device settings

## LAN Server Functions

- Verification and selection of every device which is connected to LAN-Server via the RS485 network.
- View and selection of storage parameters, for each device which is connected to the RS485 network.
- Selection of data storage time interval
- Configuration of LAN network and system parameters (for administrators only)
- User management (for administrator only)

## Selection and ordering data

Data concentrator - 4 modules DIN

Description	Part Number
LAN Network converter	DRB-LAN-RS485

## Technical data

Data in compliance with IEE 802.3 AS, IEC 60950-1, EN 61000-6-2, EN 61000-4-2	Unit	DRB-LAN-RS485
<b>General characteristics</b>		
Housing	DIN 43880	4 modules
Mounting	EN 60715	DIN rail (35mm)
Depth	mm	70
Weight	g	168
Stored values (internal)	years	10
<b>Auxiliary supply</b>		
Auxiliary voltage rating Un	VAC	230
Auxiliary power rating	VA	≤10
Auxiliary voltage range Un	VAC	184 ... 276
Frequency range	Hz	44 ... 66
<b>Operating features</b>		
System start	-	Aautomatic at connect of auxillary power
LAN server data addressing	-	by means of its server IP
Data transfer speed	Mbit/s	≤100
<b>LAN Interface Connection</b>		
Hardware interface	-	RJ 45 connector
Software protocol	-	TCP/IP - HTTP - Modbus/TCP FTP - SNTP - DHCP - DNS DynDNS - SNMP DynDNS - SNMP
<b>Instruments Bus interface</b>		
Hardware interface (Modbus-RS485)	n° termin.	3 A, B, Cable Shield
Cable type	-	shielded twisted pair
conductor cross section	mm <sup>2</sup>	≤2 x 0.2 or 2 x 24 AWG
conductor capacitance	pF/m	≤50
impedance	ohm	120
Cable length	m	≤100
Directly connected instruments	n°	31
Communications protocol	-	Modbus RTU and Ascii
<b>Safety</b>		
Degree pollution	-	2
Overvoltage category	-	II
Working voltage	V	300
Clearance	mm	4.0
Creepage distance in equipment	mm	4.5
Test voltage impulse (1,2/50 s) peak value	Kv	4
50 Hz 1 min	Kv	4
Housing material flame resistance	class	UL 94V0
<b>Connection terminals</b>		
Type cage		POZIDRIV
Terminal capacity solid wire min. (max)	mm <sup>2</sup>	0.75 (6)
stranded wire with sleeve min. (max)	mm <sup>2</sup>	0.75 (4)
<b>Environmental conditions (storage)</b>		
Temperature range	°C	-25 ... +70
<b>Environmental conditions (operating)</b>		
Temperature range	°C	-10 ... +55
Altitude (max.)	meters	≤2000
Humidity yearly average, not condensing	-	≤75%
on 30 days per year (not condensing)	-	≤95%
IP rating	-	IP20

# KILOWATT HOUR ENERGY METERS

## Features

- High accuracy
- Pulsed output optional
- DIN-rail or panel mounted
- Active energy consumption indication
- Direct connection

## Benefits

- Energy efficiency and awareness
- Balanced and safe systems
- No maintenance

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Secondary metering

## Approvals

IEC

An extensive range of DIN-rail and panel mounted Kilowatt hour meters which measure the real consumption of active energy. These instruments are ideal for secondary metering in switchgear, plant instrumentation and process control applications.


These models incorporate an electro-mechanical kWh counter or LCD display with associated electronics within the instrument case. Requiring no maintenance, the kWh energy meters support energy efficiency and awareness whilst ensuring systems remain balanced and safe.



# PANEL MOUNTED INTEGRA Ci1 ENERGY METER



## Features

- Backlit LCD screen
- Bezel depth 6.1mm
- Plug-in output modules
- Programmable CT ratio
- User programmable system configuration
- Phase diagnostic indication
- System running indication 
- Removable energy threshold (1%)

## Benefits

- Cost effective
- Intuitive navigation
- Easy 'clip-in' panel mounting

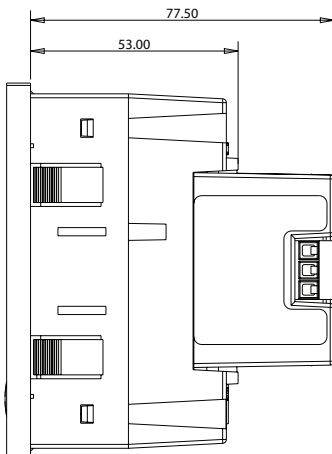
## Standards

IEC 61326  
IEC 61010-1  
IEC 62053-21  
RoHS Compliant



## Parameters

Button	Screen	Parameters
CT	1	CT Ratio
Wh	2	IMPORT Wh
	3	EXPORT Wh
VArh	4	IMPORT VArh
	5	EXPORT VArh
TEST	6	Phase sequence diagnostic



The Integra Ci1 energy meter is specially designed and developed as a cost affected watt hour and VAr hour meter to complement the current Crompton Instruments Ci meter series. The Integra Ci1 self-contained 96mm DIN panel mounted Watt hour, VAr hour meter measures the real consumption of active and reactive energy to Class 1.0 accuracy.

## Programmable functions

Integra Ci1 kWh meter provides simple programming to suit single-phase, three-phase three-wire and three-phase four-wire un-balanced system configurations, CT ratio settings and configuration of selected communication options. To prevent unauthorised access to the product configuration settings, all set-up screens offer password protection.

## Specifications

Input	
Nominal input voltage	100-289V AC L-N (173-500V AC L-L)
Max. continuous input overload voltage	120% of nominal
Max. short duration input voltage	2 x range maximum (1 second application repeated 5 times at 5 min intervals)
Nominal input voltage burden	< 0.2VA per phase
Nominal input current	5A AC rms
Max. continuous input overload current	120% of nominal
Max. short duration input current	10 x range maximum (1 second application repeated 5 times at 5 min intervals)
Frequency	45-66Hz
Auxiliary	
Operating range	110-400V AC nominal +/- 10% (99-440V AC absolute limits) or 120-350V DC +/- 20% (96-420V DC absolute limits)
Auxiliary burden	5 VA (Max)
Accuracy	
Active energy (Wh)	Class 1 (IEC 62053-21)
Reactive energy (VArh)	+/- 1% of range
Display	
LCD	8 character backlit counter (#####.#) After the maximum reading is reached the digits will return to zero
Output modules (optional)	
Pulsed output relays	1 per module (2 modules fitted per Ci1)
Contact rating	50mA max at 250V AC
Type	Solid state relay
RS485 output module	1 RS-485 communication module (maximum of 1 module fitted per Ci1)
Type	2-wire half duplex
Baud rate	2400, 4800, 9600, 19200, 38400
Enclosure	
Enclosure style	DIN 96 panel mount
Dimensions	96x96x64.1mm (depth behind panel without module 58mm, with module 82.5mm)
Panel cut-out	92x92mm
Panel thickness	1-5mm
Front protection rating	IP52

## Ordering Codes

Description	Part Number
Integra Ci1 base unit	CI1-01
Options	
Pulsed output	CI-PUL-01
Modbus® RS485 output	CI-MOD-01
Accessories	
IP65 protective cover	3 G365 02
IP54 panel gasket	3 C345 01

# THREE-PHASE DIN-RAIL KWH ENERGY METERS



## Features

- Class 2 accuracy
- Pulsed output
- Selectable CT ratios
- Dip switch settings
- 7-digit mechanical counter
- Insulated CT connections
- Active energy consumption indicator
- 4 DIN module format
- 3 or 4-wire systems

## Benefits

- Increased energy efficiency and awareness
- High accuracy
- Balanced and safe systems
- Maintenance free

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control
- Secondary metering

## Approvals

IEC EN 61010-1  
IEC EN 61036  
EMC and LVD

## DRK-3PCT-415

### Three-phase 400V CT Connected 5A, Pulse Output, Three- or Four-wire System

This innovative four DIN module kWh energy meter measures the real consumption of active energy to Class 2 accuracy with a resolution of 1kWh displayed via a mechanical counter on the front panel. The module is operated via an internal current transformer with pulsed output optically isolated from the power supply and load.

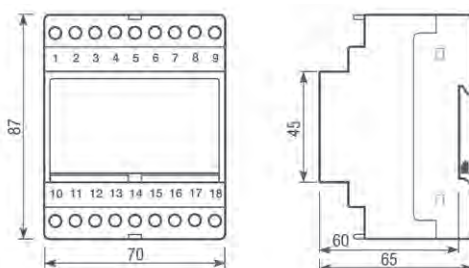
## Specifications

Active energy accuracy	Class 2
Input frequency	50 - 60Hz
Nominal input voltage	400V L-L (230V L-N))
Input voltage tolerance	-15% to +10% of nominal
Nominal input voltage burden	<2.5VA
Nominal input current	5A
Startup current	15mA
Max continuous input current	6A
Nominal input current burden	<2.5VA
Current measurement	Internal current transformer
System CT ratios	5, 10, 25, 50, 75,100, 125, 150, 200, 250, 300, 400, 500, 600, 800, 1000A
Pulsed output	Opto-isolated
Pulse duration	<100 milliseconds
Pulsed frequency	1 per kWh
Pulse capacity	3 - 30V DC, <20mA
Counter	7-digit mechanical counter
Reading resolution	1 kWh
LED indicator display	Green - power supply Red - active power consumption @ 1 beat per 1/4 kWh Yellow: warning of 1/4 kWh negative
Enclosure material	Class V-0 in accordance with UL94
Compliant with	IEC EN 61010-1, IEC EN 61036, EMC and LVD
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Relative humidity	0 - 95%, non-condensing
Dimensions	4 x DIN modules wide x 87mm high
IP protection	IP20

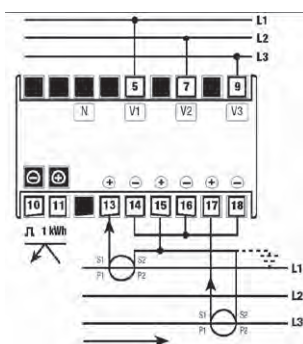
## Ordering Codes

Description	Part Number
3-phase 230V -CT connected 5A, pulsed output, 3 or 4-wire	DRK-3PCT-415

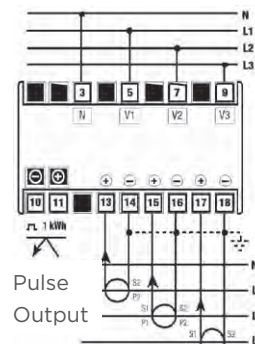
## Dimensions and Connections



DRK-3PCT Three-phase CT connected 5A(\*) three-wire system



DRK-3PCT Three-phase CT connected 5A(\*) four-wire system





# CONCENTRATOR MODULE FOR KWH ENERGY METERS



## Features

- Collects up to 8 pulsed inputs
- Remote monitoring device
- Modbus® protocol
- 8 dip switch settings
- Dual charge rate handling
- Data transit and power indicators
- 4 DIN module format

## Benefits

- Pulse collection
- Increased energy efficiency and awareness
- Balanced and safe systems
- Maintenance free

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor control
- Secondary metering

## Approvals

IEC EN 61010-1  
 IEC EN 50081-1  
 IEC EN 50082-1  
 EMC  
 LVD

## DRK-485-230

### 8 Input Remote kWh Energy Consumption Monitoring Device

The DRK-485 concentrator module remotely monitors energy consumption from up to 8 Crompton kWh meters within a 25 metre radius. The device communicates through a Modbus® connection to a computer COM port via a RS485 serial line. Up to 32 concentrator modules can be connected to the RS485 line without the need for signal amplifiers. Up to 247 modules in groups of 32 can be connected when separated by signal amplifiers.

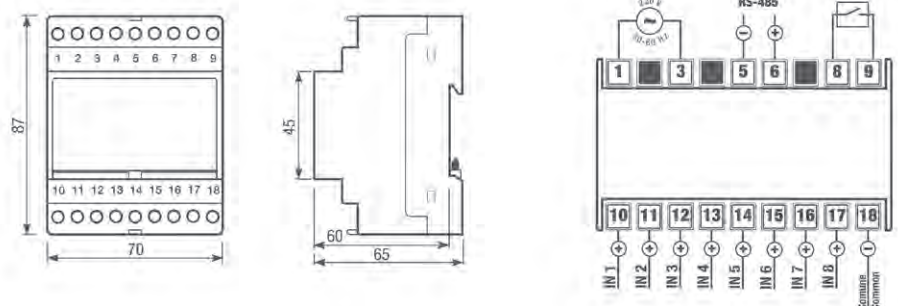
## Specifications

Input frequency	50 - 60Hz
Nominal input voltage	230V AC
Input voltage tolerance	-15% to +10% of nominal
Nominal input voltage burden	2VA
Digital communications	RS485 interface Modbus® protocol
Band handling	Dual charge
Baud rate	9600 bits per second
Transmission mode	ASCII
Error detection method	Longitudinal redundancy check
Max number of contactors	Up to 8 input signals (1 and 3-phase)
Pulse input duration	<100 milliseconds
LED indicator display	Green - power supply Red - data transit via RS485
Enclosure material	Class V-0 in accordance with UL94
Compliant with	IEC EN 61010-1, IEC EN 50081-1, IEC EN 50082-1, EMC and LVD
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Relative humidity	0 - 95%, non-condensing
Dimensions	4 x DIN modules wide x 87mm high
IP protection	IP41 to front, IP20 to rear
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Relative humidity	0 - 95%, non-condensing
Dimensions	4 x DIN modules wide x 87mm high
IP protection	IP20

## Ordering Codes

Description	Part Number
Remote kWh energy consumption monitoring device	DRK-485-230

## Dimensions and Connections



# SINGLE-PHASE DIN-RAIL KWH ENERGY METERS (DIRECT CONNECTION)



## Features

- Class 1 accuracy
- Direct connected 63A
- Pulsed output (Opto)
- LCD display
- Non-zeroing total counter
- Active energy consumption indication
- 3 Din module format

## Benefits

- Energy efficiency and awareness
- High accuracy
- Balanced and safe systems
- No maintenance

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Secondary metering

## Approvals

IEC EN62052-11  
IEC EN62053-21  
EMC and LVD

## DRK-1P-230-D63

This three DIN module kWh energy meter measures the real consumption of active energy. The module meter has the highest accuracy class (1) with easy wiring, back illuminated LCD display, non-zeroing total counter and partial zeroing counter. This module passes the load cable through the case allowing up 63A direct connection.

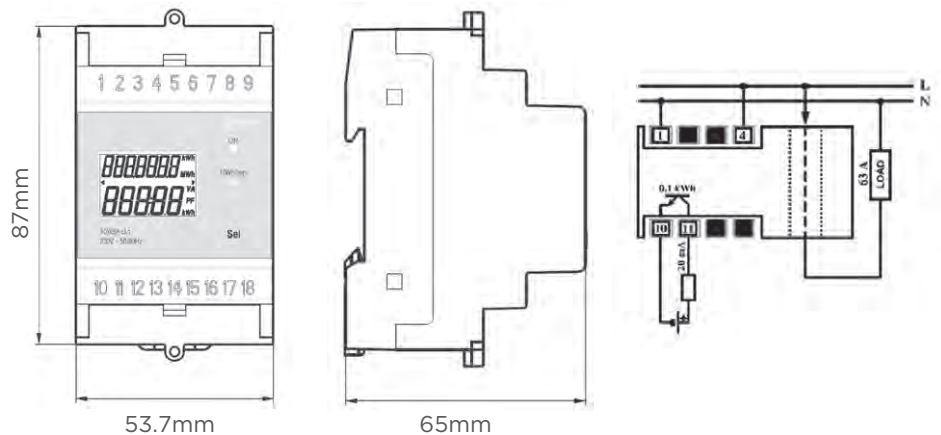
## Specifications

Active energy accuracy	Class 1 in accordance with CEI-EN 62053-21
Input frequency	50-60Hz
Nominal input voltage	230V AC
Input voltage tolerance	-15% to +10% of nominal voltage
Nominal input voltage burden	<2.5VA
Max input current	63A
Current input Ib	10A
Start-up current	40mA
Nominal input power burden	<2.5VA
Pulsed output	Opto-isolated, open collector
Pulsed voltage	9-24 V DC +/-10% (switchable O/P current 20mA max)
Pulsed duration	100 milliseconds +/-15%
Pulsed frequency	1 per 0.1kWh
Display	LCD 7 + 5-digit
Reading resolution	0.1kWh and/or 0.1MWh (automatic)
LED indicator display	Green - Power supply Red - Flashing @ 10Wh
Enclosure material	Grey RAL 7035 class V-0 in accordance with UL94
Compliant with	IEC EN 62052-11, IEC EN 62053-21, EMC and LVD
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Relative humidity	10% - 90%, non-condensing
Dimensions	3 x DIN modules wide 53.7mm x 87mm high
Max. diameter of through-hole	12.5mm
IP protection	IP51 at front, IP20 at rear

## Ordering Codes

Description	Part Number
1-phase 230V - 63A direct connected, pulsed output (Opto)	DRK-1P-230-D63

## Dimensions and Connections



# THREE-PHASE DIN-RAIL KWH ENERGY METERS (DIRECT CONNECTION)



## Features

- Class 1 accuracy
- Direct connected 100A
- Pulsed output (Opto)
- LCD display
- Non-zeroing total counter
- Active energy consumption indication
- 7 DIN module format

## Benefits

- Energy efficiency and awareness
- High accuracy
- Balanced and safe systems
- No maintenance

## Applications

- Switchgear
- Distribution systems
- Generator sets
- Control panels
- Energy management
- Building management
- Utility power monitoring
- Process control
- Secondary metering

## Approvals

IEC EN62052-11  
IEC EN62053-21  
EMC and LVD

## DRK-3P-400-D100

This seven DIN module kWh energy meter measures the real consumption of active energy. The module meter has the highest accuracy class (1) with easy wiring, back illuminated LCD display, non-zeroing total counter and partial zeroing counter. This module passes the load cable through the case allowing up 100A direct connection on a three-phase system.

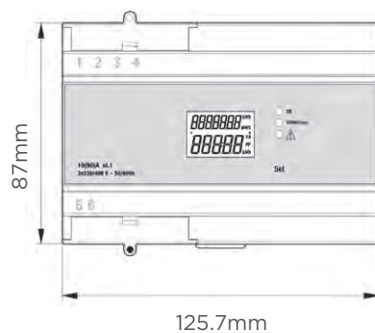
## Specifications

Active energy accuracy	Class 1 in accordance with CEI-EN 62053-21 standard
Input frequency	50 - 60Hz
Nominal input voltage	3 x 230V ac L-N (400V L-L)
Input voltage tolerance	-15% to +10% of nominal voltage
Burden	< 2.5VA
Max input current	100A
Pulsed output	Opto-isolated, open collector type
Pulsed voltage	9-24V dc +/-10% (switchable O/P current 20mA max)
Pulsed duration	100 milliseconds +/-15%
Pulsed frequency	1 per 0.1 kWh
Display	LCD 7 + 5-digit
Reading resolution	0.1 kWh from 000000.0kWh - 999999.9kWh 1 kWh from 1000000kWh to 9999999kWh (Automatic)
LED indicator display	Green - power supply Red - flashing @ 10kWh Yellow - indicates wrong connection
Enclosure material	Grey RAL 7035 class V-0 in accordance with UL94
Compliant with	IEC EN62052-11, IEC EN62053-21 (2003-03) EMC and LVD
Operating temperature	-10°C to +45°C
Storage temperature	-25°C to +70°C
Relative humidity	10% - 90%, non-condensing
Dimensions	7 x DIN modules wide 125.7mm x 87mm high
IP protection	IP51 at front, IP20 at rear
IP protection	IP20

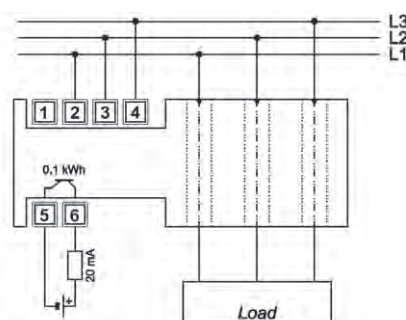
## Ordering Codes

Description	Part Number
3-phase 230V L-N (400V L-L) - 100A direct connected, pulsed output (Opto)	DRK-3P-400-D100

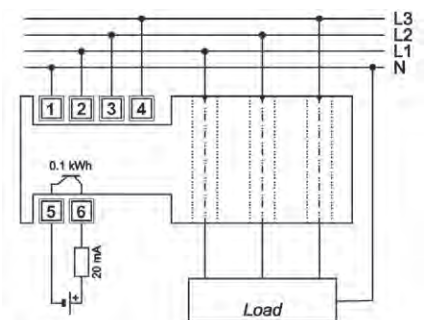
## Dimensions and Connections



Three-wire System



Four-wire System



# PANEL MOUNTING OPTION KIT



Where panel mounting of the DIN rail devices is necessary a kit is available for DIN96 cutouts.

Available in 3MOD and 4MOD the products can be easily panel mounted.

## Part Number

DR-96-3MOD-GRAY

DR-96-4MOD-GRAY

WHEREVER ELECTRICITY FLOWS, YOU'LL FIND TE ENERGY



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